Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

VI. Let ABC be △ right-angled at C. Produce AC to some point as D. Draw DF perpendicular to AB, produced, and meeting CB, produced.

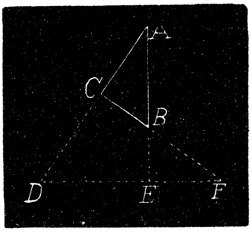

Fig. 6.

Employing notation similar to that used in V., and proceeding somewhat in the same manner, we find that this method also yields a large number of proofs, in fact the same number that we found in V.

[To be Continued.]

ARITHMETIC.

Conducted by B. F. FINKEL, Springfield, Mo. All contributions to this department should be sent to him.

SOLUTIONS OF PROBLEMS.

56. Prophsed by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy in Irving College, Mechanicsburg, Pennsylvania.

A, B, and C can walk at the rate of $a=3$, $b=4$, and $c=5$ miles, per hour. They start from Washington, at $m=1$, $n=2$, and $p=3$ o'clock, P. M., respectively. When B overtakes A, he is ordered (by A) back to C. When will B and C meet? Suppose B had ordered A back to C, when would A and C meet? In case all three continue walking ahead, at what time will they meet?

Solution by P. S. BERG, Larimore, North Dakota.

Since B gains 1 mile in 1 hour on A, to gain 3 miles will require 3 hours, or it will be 5 o'clock and 12 miles from starting point when B and A meet. C has traveled 10 miles. Since B and C travel 9 miles in 1 hour, they will travel 2 miles in $\frac{2}{9}$ hour, hence they will meet at $5\frac{2}{9}$ o'clock. Since A and C travel 8 miles in 1 hour, they will travel 2 miles in $\frac{1}{4}$ hour, hence they will meet at $5\frac{1}{4}$ o'clock.

In case all three continue walking ahead, as stated above A and B will meet at 5 o'clock. Since C gains 2 miles on A in 1 hour, to gain 6 miles will require 3 hours. Hence they will meet at 6 o'clock. Since C gains 1 mile on B in 1 hour, to gain 4 miles will require 4 hours. Hence it will be 7 o'clock when they meet.

Also solved by *B. F. YANNEY* and *H. C. WILKS.*

57. Proposed by L. B. FRAKER, Weston, Ohio.

Suppose that in a meadow the grass is of uniform quality and growth and that 6 oxen or 10 colts could eat up 3 acres of the pasture in $\frac{14}{25}$ of the time in which 10 oxen and 6 colts could eat up 8 acres; or that 600 sheep would require $2\frac{4}{7}$ weeks longer than 660 sheep to eat up 9 acres.

In what time would an ox, a colt, and a sheep together eat up an acre of the pasture on the supposition that 589 sheep eat as much in a week as 6 oxen and 11 colts? By Arithimetic, if possible.—Hunter's Arithmetic. (Unsolved in *School Visitor.*)

Solution by B. F. YANNEY, A. M., Professor of Mathematics, Mount Union College, Alliance, Ohio.

1. By first condition, the eating capacity of a colt is to that of an ox as 6 : 10.

$\therefore$ By last condition, the eating capacity of a colt is to that of a sheep as 589 : 21.

$\therefore$ The eating capacity of a colt is to that of a sheep, an ox, and a colt together, as 1767 : 4775.

2. $\therefore$ The first two conditions of the problem may be stated as follows:

10 colts could eat up 3 acres of the pasture in $\frac{18}{25}$ of the time in which 17 colts could eat up 6 acres, or 1400 colts would require $2\frac{6}{7}$ weeks longer than 1540 colts to eat up 589 acres.

3. Let $42u$ be the amount of grass consumed each week by a colt.

4. Suppose the time it takes 10 colts to eat up 3 acres is 18 weeks; then, the time it takes 17 colts to eat up 6 acres would be 25 weeks.

5. $\therefore (10\times18\times42u)\div3=2520u$, total amount of pasture eaten from 1 acre in 18 weeks; and $(17\times25\times42u)\div6=2975u$, total amount of pasture eaten from 1 acre in 25 weeks.

6. $\therefore (2975u-2520u)\div(25-18)=65u$, obviously the amount of growth on 1 acre in 1 week, and the same result that would be obtained whatever the time supposed in (4).

7. $\therefore 2520u-18\times65u=1350u$, amount of pasture originally on 1 acre.

8. $\therefore (589\times1350u)\div(1400\times42u-589\times65u)=\frac{159030}{4103}$, the number of weeks it would take 1400 colts to eat of 589 acres of pasture; similarly, the time required for 1540 colts is found to be $\frac{159030}{5279}$ weeks. Now, the difference between these two numbers, $\frac{159030\times1176}{4103\times5279}$ weeks : $2\frac{6}{7}$ weeks, the true difference :: 18 weeks, the supposed time : the true time.

9. $\therefore$ Since the only number that needs correcting, to enable us to complete the solution, is $1350u$, the amount of pasture originally on 1 acre, the time required for an ox, a colt, and a sheep together to eat up 1 acre, is

$$\left(\frac{20}{7}\times\frac{4103\times5279}{159030\times1176}\times1350u\right)\div\left(\frac{4775}{1767}\times42u-65u\right)=9\frac{2482499}{11757354}\text{weeks. Answer.}$$

H. C. Wilkes gets 142.25+ days.

NOTE. This problem appeared a few years ago in the *School Visitor.* With no little difficulty, we obtained a solution by Algebra. The solution was not published because of the difficult composition. It is strange that such a problem should appear in an arithmetic which is to be used by boys and girls 16 years old and upwards. EDITOR.